



Public Hearing
On
Health Care Quality
And
Information Technology Adoption and Use

Testimony Before the
Public Health Committee
State of Connecticut

Presented by:
Lisa Weiss
Health Policy Advisor
Qualidigm

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Good morning. My name is Lisa Weiss. I am pleased to have the opportunity to participate in this important dialogue regarding the role and use of information technology to improve the quality, safety, access and affordability of health care delivered across Connecticut. I am the Health Policy Advisor at Qualidigm, a private, non-profit organization, located in Middletown, committed to the continuous improvement of health care across all settings.

Qualidigm performs its work on behalf of Medicare, Medicaid, academia and the private sector to measure, evaluate and improve health care. We approach our work in a collaborative manner working with providers, consumers, business, payers, academia and health policymakers to achieve our mission. For example, Qualidigm has participated in and supported the development of eHealth Connecticut, the multi-stakeholder statewide organization that presented to you earlier this week on both the status of their Health Information Exchange (HIE) efforts and the importance of the state's leadership and participation in the task at hand.

Qualidigm is very enthusiastic about the prospect of information technology adoption and its use across the health care delivery system to improve the quality, safety, access and affordability of health care delivered across Connecticut.

For years, Qualidigm, in our neutral capacity, has seen the fragmentation that exists across the delivery system, the silo approach to treatment by setting, and the absence of or duplication of tests and reports regarding the appropriate treatment of patients. At the same time, we have actually observed that, given credible information and tools, providers are not only motivated to but also do change behavior and care processes that ultimately lead to improved patient outcomes. We have seen as well the growing interest and even excitement of providers regarding the opportunity to forge ahead into the challenging waters of health information technology.

There are three points I want to underscore today:

1) **HIT adoption through electronic medical records is underway in Connecticut**, in part, with support from Medicare. As Medicare's Quality Improvement Organization, Qualidigm is working across the state to educate clinicians regarding the adoption and use of electronic medical records. We have been funded to work intensively with 5% of primary care practicing physicians to assist them in navigating HIT readiness assessments and implementation, and the redesign of their practices and care processes as a result of HIT adoption.

2) **Clinicians are more interested in HIT adoption than might have been expected.** Qualidigm, working in concert with eHealth Connecticut and the Connecticut State Medical Society's IPA, designed and conducted a survey of 2,366 CT medical offices representing 6,956 physicians regarding their baseline knowledge, readiness, interest in and use of electronic medical records. The results are both favorable and promising. Attached to my written testimony is a just published article in *Connecticut Medicine* on the results of the survey. Of those who responded, 16% indicated that they were already using some form of electronic medical record and another 25% are contemplating purchase within the next year. Current ePrescribing use was reported at 7% and another 20% have plans to purchase ePrescribing capability within the year.

3) **The adoption and use of health information technology across the delivery system has those committed to quality improvement like Qualidigm genuinely excited by the promise of things to come** such as a reduction in medical errors, improvement in the management of chronic disease and the health status of our residents, and from another perspective, value based purchasing. This promise is the very reason that Qualidigm came to the table with other early adopters to support the launch of eHealth Connecticut. Those of us who share this quality vision cannot wait to get started.

In closing, let me thank you for this opportunity to share our thoughts and to hear those of others. We commend you for your leadership. I stand ready to make myself available for questions either now or in the future.

For further information, please contact:

Lisa Weiss
Health Policy Advisor
Qualidigm
(860)-298-9080
weisslk@comcast.net

Marcia Petrillo
Chief Executive Officer
Qualidigm
(860)-632-6328
mpetrillo@qualidigm.org

The State of Physician Office-Based Health Information Technology in Connecticut: Current Use, Barriers and Future Plans

KRISTIN MATTOCKS, PhD, KENNETH LALIME, RPh, JANET P. TATE, MPH,
TIERNEY E. GIANNOTTI, MPA, KEVIN CARR, MD, ANGELO CARRABBA, MD,
THOMAS BLUM, MD, THOMAS P. MEEHAN, MD

ABSTRACT—Qualidigm and the Connecticut State Medical Society—Independent Practice Association (CSMS-IPA), Inc. have conducted a survey of the physicians participating in the CSMS-IPA to assess current use of health information technology in their offices and their plans for future use. The survey was conducted to assist *eHealth Connecticut*, a Connecticut-based nonprofit organization, in its charge to promote electronic health information exchange in Connecticut. The survey was distributed to 2,366 medical offices representing 6,956 physicians in Connecticut. Survey results revealed that the most commonly utilized types of technology were practice management systems (70%) and e-mail (64%). The most common barriers to the adoption of new technologies were cost (71%) and time requirements (39%). Primary-care providers and small practices were more likely to cite cost as a barrier to technology implementation. Despite these challenges, many physicians reported plans to implement electronic medical records (25%) or electronic prescribing (20%) in the next year.

KRISTIN MATTOCKS, PhD, MPH, Yale University School of Medicine, New Haven; KENNETH LALIME, RPh, CSMS-IPA, New Haven; JANET P. TATE, MPH, Qualidigm, Middletown, University of Connecticut Health Center, Department of Community Medicine, Farmington; TIERNEY E. GIANNOTTI, MPA, Qualidigm, Middletown; KEVIN CARR, MD, Waterbury Hospital, Waterbury, Department of Medicine, Yale University School of Medicine, New Haven, *eHealth Connecticut*, Clinical Committee Co-Chairmen; ANGELO CARRABBA, MD, Connecticut State Medical Society, New Haven; THOMAS BLUM, MD, DMH, Lawrence and Memorial Hospital, New London; THOMAS P. MEEHAN, MD, MPH, Qualidigm, Middletown, Department of Medicine, Yale University School of Medicine, New Haven, *eHealth Connecticut*, Clinical Committee Co-Chairmen.

Introduction

HEALTH information technologies, including electronic medical records (EMRs), patient registries, and computerized physician order entry (CPOE), are considered vital to improvement of health-care quality, efficiency and safety. Benefits to medical practices using these technologies include improved quality, reduced medical error rates, enhanced cost-effectiveness, and greater consumer involvement in health-care decision-making.¹ While the benefits of health information technology are clear, integrating technology into the health-care workplace has been slow.^{2,3}

The process of introducing EMRs into clinical practice has been particularly slow. In 2004, President Bush issued an executive order establishing the Office of the National Coordinator for Health Information Technology, with the mission "to provide leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care."⁴ Recent estimates suggest that only 10% to 15% of physician offices currently utilize some form of EMR. EMR adoption rates vary by size of practice: groups with five or fewer full-time equivalent physicians report a 12.5% adoption rate of EMR technology, compared to 19.5% of practices with 20 or more FTEs.⁵

Interest in the current state of health information technology in physicians' offices has been recently spurred in Connecticut by the formation of *eHealth Connecticut*, a nonprofit organization formed to develop a statewide health information exchange network. The goal is to achieve greater quality, safety, and efficiency in the delivery of health services in Connecticut. To determine the extent of health information technology use in physicians' offices, Qualidigm, the Quality Improvement Organization for

Connecticut, and the Connecticut State Medical Society Independent Practice Association (CSMS-IPA) partnered to develop and administer a survey to: (1) determine the types of technology currently used in physicians' offices; (2) identify barriers to health information technology adoption; and (3) summarize provider plans for future technology utilization within the practice setting.

Methods

Study Population and Survey Administration

The study population of interest was all Connecticut physicians. A convenience sample of all members of the CSMS-IPA was used. Since approximately 85% of all active physicians in Connecticut are CSMS-IPA members, we felt this would be a meaningful sample. After consulting with our Internal Review Board (IRB) organization, we determined that no formal IRB application was necessary, since the physician survey conveyed no risk to patients. In March 2006, 2,366 Connecticut physician offices, representing 6,956 physicians, were contacted to complete a survey on their current and planned use of health information technology. The CSMS-IPA contacted physician offices using an automated fax system and asked recipients to complete a two-page survey (Fig. 1). Respondents had the option of returning their replies to the CSMS-IPA by

fax or entering their answers directly into a web-based form (Survey Monkey).⁶ A second fax, stamped "2nd Request" was sent three weeks after the first to encourage participation.

Duplicate replies (those with the same practice name) were resolved according to the following procedure: If responses were received from an administrator representing multiple sites as well as individual practices within the group, then only the physician replies were included. If responses were received from both a physician and an office manager in the same practice, then the physician survey was analyzed. In the case of duplicate responses from individuals with the same or similar title within an office (including physicians), the earliest reply was used.

Data Analysis

Analysis was limited to medical physician offices. Surveys returned by podiatrists (11), optometrists (6), social agencies (5), chiropractors, naturopathic physicians, oral surgeons, psychologists, and pediatric dentists were excluded. Primary-care physician offices were defined as those that listed their specialty as internal medicine, family medicine, pediatrics or OB/GYN. Small practices were defined as those that employed two or fewer physicians, whereas large offices were defined as those that

Figure 1.

CSMS-IPA, INC.

eHealthCT Health Information Technology Survey

Thank you for taking the time to complete this survey. This survey is being administered on behalf of eHealthCT, Connecticut's Regional Health Information Organization. The goals of the survey are to gain a better understanding of the usage of health information technology in Connecticut physicians' offices. The survey also seeks to highlight facilitators and barriers to technology use in the practice setting. In exchange for completing this survey, we will provide you with a timely and comprehensive overview of the results, which will highlight current trends in health information technology in Connecticut.

Practice Characteristics

1. What is the name of your office practice? _____

2. How many physicians currently work in your office? _____

3. What is your position?
☐ Physician ☐ Office Manager ☐ Other: _____ (please describe)

4. What is your specialty?
☐ Family Medicine ☐ Internal Medicine ☐ Psychiatry
☐ Obstetrics/Gynecology ☐ Pediatrics
☐ Other: _____ (please describe)

5. How many offices do you have in your practice? _____

Current Technology Use

6. What types of technology do you currently use on a regular basis? (check all that apply)
☐ Email
☐ Electronic Medical Record (EMR)
☐ E-prescribing
☐ Document Scanning
☐ Registries of patients with specific diseases
☐ E-laboratory
☐ Practice Management System (registration/scheduling/billing)
☐ Other: _____ (please describe)

7. What type of internet connectivity do you have in your practice?
☐ None ☐ Dial-Up ☐ Broadband (Cable or DSL) ☐ T1 or ISDN

8. Is your office practice connected to a hospital information system?
☐ Yes ☐ No ☐ Not sure

9. If you answered YES to question 8, does your practice share any of the following types of data with hospital(s)?

Type of Data	Yes	No	Not Sure
a. Laboratory data			
b. Radiology data			
c. Pharmacy data			
d. Discharge summaries			

Barriers/Readiness Assessment

11. What barriers has your practice encountered in adopting new technologies? (check all that apply)
☐ Cost (financial, loss of productivity) ☐ Time to train staff/implement system
☐ Lack of information technology culture ☐ Technical proficiency of staff
☐ Lack of physician champion for HIT ☐ Lack of organizational support
☐ Other: _____ (please describe)

12. In thinking about your office practice's efforts to adopt new Health Information Technology (HIT), does your office have...

	Yes	No
a. Realistic time and cost assumptions		
b. A physician champion		
c. An administrative champion		
d. Some experience using technology		

Preferences for Future Inter-Connectivity and Data Use

13. In the next year, which of the following new technologies/applications do you anticipate implementing? (check all that apply)
☐ Email
☐ Electronic Medical Record (EMR)
☐ E-prescribing
☐ Document Scanning
☐ Registries of patients with specific diseases
☐ E-laboratory
☐ Practice Management System (registration/scheduling/billing)
☐ Other: _____ (please describe)

14. Do you anticipate needing assistance with any of the following? (check all that apply)
☐ Assessing your practice's readiness to adopt new information technology
☐ Evaluating EMR, registry, or e-prescribing vendors
☐ Identifying which HIT system best meets your practice needs
☐ Evaluating HIT vendor bids and developing contract guidelines
☐ Identifying strategies for successfully integrating HIT system components into your practice workflow
☐ Other: _____ (please describe)

15. How do you anticipate using the information captured in your practice's Health Information Technology systems? (check all that apply)
☐ To improve clinical care
☐ To participate in public reporting programs
☐ To participate in pay-for-performance programs
☐ Other: _____ (please describe)

Thank you for completing the survey. Please fax completed survey to: (860) 255-6285 X1

Table 1.—Characteristics of Respondent Offices

	N (%)
Number of Surveys Analyzed	672
Specialty of the Office	
Surgery and subspecialties	153 (22.8)
Medical subspecialties	118 (17.6)
Internal Medicine	116 (17.3)
Pediatrics	59 (8.8)
Family Medicine	58 (8.6)
OB/GYN	48 (7.1)
Other	40 (6.0)
Multispecialty	24 (3.6)
Psychiatry	23 (3.4)
Dermatology	21 (3.1)
No Response	7 (1.0)
Peds subspecialty	5 (0.7)
Position of Respondent	
Physician	285 (42.4)
Office Manager and others	387 (57.6)

employed three physicians or more. Summary statistics were calculated on participant characteristics and current technology use. Data were entered into Survey Monkey and downloaded into an Access database. Associations between current and future technology use, presence of barriers, physician specialty, and practice size (number of physicians) were tabulated and tested for statistical significance with the chi square test. Logistic regression was used in multivariable analyses because all dependent variables were dichotomous. All data were analyzed with SAS 9.1 software (SAS Institute, Cary, NC).

Table 2.—Technology Currently in Use

Technology Used on a Regular Basis	N (%)
Practice Management (registration, scheduling, billing)	470 (69.9)
E-mail	432 (64.3)
Document scanning	118 (17.6)
Electronic Medical Record	106 (15.8)
Other	65 (9.7)
E-laboratory	58 (8.6)
E-prescribing	48 (7.1)
Disease registries	39 (5.8)
None	38 (5.7)
Type of Internet Connection	
High speed	541 (80.5)
None or no response	76 (11.3)
Dial-up	55 (8.2)
Connected to a Hospital Information System	
Yes	407 (60.6)
No	245 (36.5)
Not sure or no response	20 (3.0)

High speed: Cable, DSL, T1 or ISDN

Results

Description of the Sample

A total of 804 responses were received, 96 of which were duplicates, yielding a 33% response rate among the offices. After removal of duplicates and respondents that did not meet the inclusion criteria, 672 surveys remained for analysis. Primary-care physicians (internal medicine, family medicine, OB/GYN and pediatrics) were the most frequent respondents, followed by surgical and medical subspecialties as detailed in Table 1.

The mean number of physicians in each office was three, with a range of one to 40. Two hundred and ninety-eight offices had one doctor, while an additional one hundred seven offices had two doctors. The remainder of the offices included in the analysis (267) employed three or more physicians.

Current Technology Use

The most common type of technology employed in physician offices are practice management systems (Table 2). Four hundred seventy offices (70%) used practice management systems, which included registration, scheduling, or billing features. Four hundred thirty-two physician offices (64%) reported regular e-mail usage, while 118 (18%) utilized document-scanning systems. One hundred six (16%) of the offices employed an electronic medical record system, while 58 offices (9%) utilized e-laboratory systems. Nearly 7% of physician offices utilized e-prescribing. Most offices (80%) had high-speed internet access. Fifty-five (8%) had dial-up connections and 76 (11%) reported no internet connectivity.

A majority of offices were also connected to at least one hospital information system. Four hundred seven (61%) reported a connection to at least one hospital, while 245 (36%) had no connection to a hospital information system. All 31 acute care hospitals in Connecticut were represented in the survey results. Offices that were connected to hospital information systems primarily shared laboratory (42%) and radiology (42%) data, and, to a lesser extent, shared discharge summaries (37%) and pharmacy data (15%).

Barriers to Technology Utilization

The most commonly cited barrier to adopting new technology in the physician office was cost. Five hundred twenty-one respondents (72%) cited cost as a major barrier to purchasing and implementing new technology. Other barriers included the time necessary to train staff and implement new systems (40%), a lack of technical proficiency among the office staff (26%), and a lack of an information technology culture within the office (18%). We also examined barriers to technology implementation by physician specialty. Primary-care physicians were more likely than specialists to cite cost as a barrier (Table 3). There was no significant difference for other barriers.

Table 3. Associations Between Barriers and Specialty Status

	PCP N (%)	Non-PCP N (%)	P
Number of respondents	275	393	—
Cost	216 (78.5)	262 (66.7)	<0.01
Time to train staff/implement system	109 (39.6)	151 (38.4)	0.92
Lack of IT culture	46 (16.7)	70 (17.8)	0.63
Technical proficiency of staff	66 (24.0)	94 (23.9)	0.90
Lack of physician champion	33 (12.0)	45 (11.5)	0.90
Lack of organizational support	33 (12.0)	51 (13.0)	0.64

Future Technology Plans

Physicians in Connecticut have plans to launch a variety of different types of health information technology in the upcoming year. One hundred seventy-eight offices (25%) expressed a desire to implement an electronic medical record system, while 146 offices (20%) cited plans to launch an e-prescribing system in the upcoming year. Physicians also intend to implement document scanning (17%), practice management systems (12%), and e-laboratory systems (12%) in the upcoming year.

Most physicians anticipate that they will use the information captured in these systems to improve clinical care (63%). One hundred ninety-four offices (27%) anticipated using the information to participate in pay-for-performance programs, while 118 (16%) planned to use the information to participate in public reporting programs.

Patterns of Technology Use in Primary Care vs Specialty Physicians

We examined technology use by physician specialty and found that specialists were significantly more likely to use e-mail in their clinical practices than primary-care physicians, while primary-care physicians utilized e-laboratory more frequently than specialists, and were slightly more likely to utilize e-pharmacy, although this difference was not statistically significant.

Table 4. — Associations Between Technology Use and Specialty Status

	PCP N (%)	Non-PCP N (%)	P
Number of respondents	275	393	—
Technology used now or plan to use in next year			
E-mail	184 (66.9)	306 (77.9)	0.00
Electronic Medical Record	100 (36.4)	160 (40.7)	0.18
E-prescribing	86 (31.3)	94 (23.9)	0.05
Document scanning	83 (30.2)	146 (37.2)	0.04
Disease registries	38 (13.8)	41 (10.4)	0.22
E-laboratory	64 (23.3)	65 (16.5)	0.03
Practice Management (registration, scheduling, billing)	224 (81.5)	314 (79.9)	0.974

PCP: Internal medicine, family medicine, pediatrics, OB/GYN

Multivariable Analysis of Barriers and Technology Use Among Physicians

We examined barriers to technology use among physicians, after controlling for specialty, position of respondent, and practice size. In adjusted analyses, primary-care physicians were 1.5 times more likely to report cost as a barrier ($P = 0.020$). Furthermore, physician respondents were 2.2 times more likely ($P < 0.001$) to see cost as a barrier than non-physician respondents. In

addition, physicians were twice as likely ($P = 0.009$) to cite a lack of information technology (IT) culture and three times more likely ($P < 0.001$) to see lack of organizational support as barriers to technology implementation than their non-physician colleagues.

When we accounted for covariates, smaller practices were only half as likely ($P < 0.001$) to implement electronic medical records and e-prescribing systems ($P < 0.001$) into their office practices. Primary-care physicians were approximately 50% more likely ($P = 0.038$) to utilize e-prescribing systems than nonprimary-care physicians.

Discussion

To our knowledge, this is the first comprehensive assessment of health information technology utilization in Connecticut physician offices. While our survey does not represent all of the physician offices in Connecticut, the response rate to this survey was surprisingly high and the results are encouraging. In addition to current and planned technology use, our results also identify barriers that stand in the way of technology integration into medical practice.

Our findings suggest that the majority of physicians have already incorporated some form of health information technology into their medical practices. E-mail and practice management systems, including registration, scheduling, and billing features, are the predominant forms of health information technology used in offices today. Notably, we found that 17% of the respondents were utilizing some form of electronic medical record. This figure is nearly identical to recent national data suggesting that approximately 18% of physicians use electronic medical records in their offices.⁷ Both primary-care and specialty physicians utilize all forms of technology, although specialists and physicians in larger offices were more likely to utilize electronic medical records.

Physicians in this survey, especially those in primary care, identified cost as a major barrier to implementing technology.

Costs incurred in the purchase of an EMR system include not only the initial purchase cost, but also ongoing operational costs. Other studies suggest that many physicians realize that the return on investment for an EMR system cannot be realized in the short run, and that savings produced from improved care efficiency often flow back to insurers or payers as a reduction in service use.⁸ Given that our results indicate that 25% of physicians who do not currently have an EMR plan to purchase one in the upcoming year, a significant percentage of Connecticut physicians appear willing to absorb this cost in an effort to improve clinical care through EMR systems.

Other important barriers to health information technology implementation include lack of technical knowledge and assistance regarding the purchase and implementation of appropriate health information technology systems. At present, there is some information available on costs and features of various office-based systems but little information regarding benefits and risks of health information systems, resources required for staff training, and workflow redesign.⁹ Scarce information is compounded by the problem of vendor transience, as many recent EMR companies are no longer in business or are in precarious financial situations.¹⁰ Physicians are leery of purchasing health information technology (HIT) when they are uncertain of the vendor's sustainability.

Our survey had several limitations. First, since the survey was faxed to physician offices, we cannot be sure that all the surveys were received. The office fax numbers may have been incorrect, or the survey may have been misplaced within the offices. Each of these factors could contribute to an incomplete response. Second, we did not give explicit instructions as to who should complete the survey. So, we could have received responses that did not accurately represent the state of technology adoption in the office. Third, the survey was faxed only to physicians who are members of CSMS-IPA. Physicians who are not CSMS-IPA members may differ in their utilization of technology, and therefore this survey cannot be generalized to

all physicians in Connecticut. Also, only one response was allowed per physician office, making one physician's potential response in a single physician office carry the same weight as a response from a larger practice of doctors.

In spite of these limitations, the current study provides a general overview of the state of health information technology in Connecticut physician offices. Specifically, the study highlights the need for assistance in implementing health information technology, especially for small practices where cost is a serious consideration. A parallel technology assessment is being conducted in Connecticut hospitals under the auspices of the Information Technology Committee of *eHealth Connecticut*. The results of these surveys will be incorporated into the planning of *eHealth Connecticut* as it formulates its strategic plan and initial projects.

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